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10/540,624	06/24/2005	Masato Honma	IPE-057	7137
20374 7590 09/16/2008 KUBOVCIK & KUBOVCIK SUITE 1105 1215 SOUTH CLARK STREET ARLINGTON, VA 22202				
EXAMINER				
HIGGINS, GERARD T				
ART UNIT		PAPER NUMBER		
1794				
MAIL DATE		DELIVERY MODE		
09/16/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/540,624

**Applicant(s)**

HONMA ET AL.

**Examiner**

GERARD T. HIGGINS

**Art Unit**

1794

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 July 2008.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 and 5-38 is/are pending in the application.  
4a) Of the above claim(s) 14, 15, 18 and 21-38 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-3, 5-13, 16, 17, 19 and 20 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 03 July 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendment filed 07/03/2008 has been entered. Currently claims 1-3 and 5-38 are pending, claim 4 is cancelled, and claims 14, 15, 18, and 21-38 are withdrawn from consideration.

### ***Drawings***

2. The drawings were received on 07/03/2008. These drawings are acceptable.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 9 and 10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The Examiner does not find support for the thermoplastic resin film to form an integrated layered product according to claim 1. Please point out specifically where support is found for these new limitations.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-3, 5-13, 16, 17, 19, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "rugged" in claims 1 and 17 is a relative term which renders the claim indefinite. The term "rugged" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear to what degree a surface must be non-flat for it to be considered "rugged;" furthermore, it is unclear how rugged applicants' boundary region is. For purposes of examination, the Examiner will treat the term "rugged" as any surface that is not perfectly flat. The definition with regard to the thickness of the area where the continuous filaments are present in the thermoplastic resin layer does not define the ruggedness region overall.

With regard to claim 9, it is unclear how one could form the interface region using a thermoplastic film.

#### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

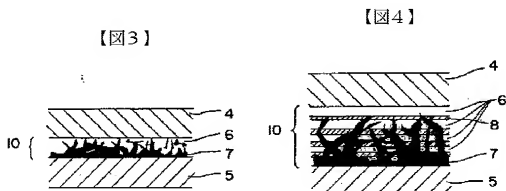
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-3, 5-7, and 8-13 are rejected under 35 U.S.C. 103(a) as obvious over Obara (JP 07-047152), machine translation included in view of Nishimura et al. (JP 07-112039), machine translation included.

With regard to claims 1 and 5, Obara teaches a layered tennis racket frame [0007]. The frame is comprised of a thermosetting resin [0008], a thermoplastic resin [0009], and continuous fibers in both the thermosetting [0008] and thermoplastic layers [0012] from the point of providing the greatest strength of the molded object. With regard to the limitation that the interface is "rugged," Obara teaches at [0015] that the "most important point about this invention" is the fact that the thermosetting resin and thermoplastic layers are "intermingled;" furthermore, Obara shows this intermingling in Figures 3 and 4.



The intermingling is shown in the area 10. The material of part 4 is a thermosetting resin identical to the material of part 6. The material of part 5 is a thermoplastic resin identical to the material of part 7. The Examiner deems this teaches a two-layer structure as parts 4 and 6 are the thermosetting material layer and parts 5 and 7 are the

thermoplastic layer; furthermore, Figure 4 clearly shows carbon fibers 8 passing through the interface and going through both the thermosetting and thermoplastic layers. The Examiner deems the intermingling in this boundary region to comprise ruggedness. With regard to the limitation that the thermoplastic resin layer is on the surface of the object, Obara teaches at [0014] that the object may have the thermosetting resin or the thermoplastic layer as the outer layer for the racket frame; however, Obara does not specifically teach the thickness of the area where said continuous filaments exist in said thermoplastic resin layer.

Nishimura et al. disclose at [0009] that it is known to make a thermoplastic layer of a tennis racket 1 mm in thickness. Clearly, the fibers contained in said thermoplastic layer would not be in a region larger than 1mm or 1000 microns.

Since Nishimura et al. and Obara are both drawn to molded tennis rackets that have thermosetting and thermoplastic resin layers with reinforcing fibers that are rugged/intermingled or have an irregular pattern at the interface of the layers; it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the thermoplastic layer of Obara approximately 1 mm (1000 microns) in thickness and therefore to contain the reinforcing fibers in an area smaller than that, including the thickness regions claimed. One of ordinary skill in the art would understand that the thickness region of reinforcing fibers would have a direct impact on the rigidity and overall strength of the resins; furthermore, one of ordinary skill would know to make the reinforcing fiber not present on the surface of the tennis racket in

order to prevent splintering of said reinforcing fibers, which could injure the consumer of said tennis racket.

The size and thickness of tennis racquets are driven by having a lightweight yet strong composite. One of ordinary skill would know to place the reinforcing fibers in any thickness amount in said thermoplastic resin, including greater than 10 microns or between 10 and 1000 microns as claimed, to provide the proper strength to the resultant article.

With regard to claim 2, Obara teaches at [0012] that arranging "the direction of fiber length to one way substantially can strengthen matrix resin most effectively, and it is desirable."

With regard to claims 3 and 12, Obara teaches at [0008] that epoxy resin is preferred as the thermosetting resin. He also teaches at [0021] that the thermosetting resin is heated in a die temperature of 70 °C, and then stiffened at 160 °C for 20 min. Judging by the fact that the preferentially used materials are the same and that these heating temperatures are greater than 60 °C, Obara will inherently anticipate claim 3.

With regard to claim 6, since the racket frame is formed as a tube comprising joined thermosetting and thermoplastic layers, and that the layers may be formed in any order [0014]; it is clear that the thermoplastic layer may comprise the inner layer/surface of the frame, and therefore that would lead it to inherently have a surface area between 0.1 and 50% of the total surface area. This is true because the outer layer of the racket frame would have a greater surface area than the inner layer, and since the total surface area of the frame must be the sum of the surface areas of the inner and outer

layers; it would necessarily be true that the inner layer must have a surface area between 0.1 and 50%.

With regard to claim 7, the Examiner deems the limitations of this claim to be a mere duplication of parts. It has been held that "mere duplication of parts has no patentable significance unless a new and unexpected result is produced." Please see MPEP 2144.04 and *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). In this instance merely duplicating the stratum of a thermoplastic and thermosetting resins with reinforcing fibers contained therein would predictably add to the structural integrity of the device overall.

With regard to claim 8, considering the fact that these materials (continuous arranged fibers set in an intermingled/rugged thermosetting and thermoplastic article, additionally please see the anticipation evidence presented for claims 11-13) are the same; a test piece formed in the same manner of applicants would inherently comprise the tensile/bonding strength; furthermore, Obara mentions the intensity, rigidity, and endurance of the racket at [0006].

With regard to claims 9 and 10, the Examiner deems the limitations that the two-layered structure of the layered product is "formed with a film of a thermoplastic resin composition" that has a thickness of "from 0.1 to 1000 microns" to be product-by-process limitations. It has been held that "even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious



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from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." Please see MPEP 2112 and *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). The structure of Obara is identical to the structure implied by the method steps of applicants' claim 9. With regard to the intended use limitations of applicants' claim 9, given that the materials and structure of Obara are identical to that claimed, the Examiner deems that the product of Obara will have the bonding strengths claimed if it were to be bonded to another molded object. With regard to the thickness of the film used in making the layered product, given that tennis racquets are relatively thin, light-weight items, the Examiner has already shown that it would have been obvious to make the thickness of the laminate as a whole will be less than 1000 microns, and therefore the thermoplastic film will also obviously be less than 1000 microns.

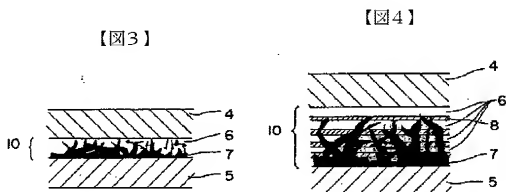
With regard to claim 11, Obara teaches using carbon fibers at [0008] and [0012].

With regard to claim 13, Obara teaches at [0009] the different thermoplastic materials, including polyolefins, polyamides, polyesters, acrylics, polycarbonates, and polystyrenes.

9. Claims 16, 17, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inogakura et al. (JP 09-277420) in view of Obara (JP 07-047152) and further in view of Nishimura et al. (JP 07-112039).

With regard to claim 16, Inogakura et al. teach bonding of a first member to a second member by way of an adhesive to create and "integral moulding" of said members [0011]; however, it does not teach the 1<sup>st</sup> member of applicants' claim 1.

Obara teaches a layered tennis racket frame [0007]. The frame is comprised of a thermosetting resin [0008], a thermoplastic resin [0009], and continuous fibers in both the thermosetting [0008] and thermoplastic layers [0012] from the point of providing the greatest strength of the molded object. With regard to the limitation that the interface is "rugged," Obara teaches at [0015] that the "most important point about this invention" is the fact that the thermosetting resin and thermoplastic layers are "intermingled;" furthermore, Obara shows this intermingling in Figure 3.



The intermingling is shown in the area 10. The material of part 4 is a thermosetting resin identical to the material of part 6. The material of part 5 is a thermoplastic resin identical to the material of part 7. The Examiner deems this teaches a two-layer structure as parts 4 and 6 are the thermosetting material layer and parts 5 and 7 are the thermoplastic layer; furthermore, Figure 4 clearly shows carbon fibers 8 passing through the interface and going through both the thermosetting and thermoplastic layers. The

Examiner deems the intermingling in this boundary region to comprise ruggedness.

With regard to the limitation that the thermoplastic resin layer is on the surface of the object, Obara teaches at [0014] that the object may have the thermosetting resin or the thermoplastic layer as the outer layer for the racket frame; however, Obara does not specifically teach the thickness of the area where said continuous filaments exist in said thermoplastic resin layer.

Nishimura et al. disclose at [0009] that it is known to make a thermoplastic layer of a tennis racket 1 mm in thickness. Clearly, the fibers contained in said thermoplastic layer would not be in a region larger than 1mm or 1000 microns.

Since Nishimura et al. and Obara are both drawn to molded tennis rackets that have thermosetting and thermoplastic resin layers with reinforcing fibers that are rugged/intermingled or have an irregular pattern at the interface of the layers; it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the thermoplastic layer of Obara approximately 1 mm (1000 microns) in thickness and therefore to contain the reinforcing fibers in an area smaller than that, including the thickness regions claimed. One of ordinary skill in the art would understand that the thickness region of reinforcing fibers would have a direct impact on the rigidity and overall strength of the resins; furthermore, one of ordinary skill would know to make the reinforcing fiber not present on the surface of the tennis racket in order to prevent splintering of said reinforcing fibers, which could injure the consumer of said tennis racket.

The size and thickness of tennis racquets are driven by having a lightweight yet strong composite. One of ordinary skill would know to place the reinforcing fibers in any thickness amount in said thermoplastic resin, including greater than 10 microns or between 10 and 1000 microns as claimed, to provide the proper strength to the resultant article.

Since Inogakura et al. and Obara in view of Nishimura et al. are drawn to fiber-reinforced resin compositions that provide high strength and rigidity, it would have been obvious to one having ordinary skill in the art of fiber-reinforced resins at the time the invention was made to substitute the 1<sup>st</sup> member of Inogakura et al. with the fiber-reinforced resin composition of Obara in view of Nishimura et al. The results of such a substitution would have been known by one having ordinary skill, specifically an increase in the strength, rigidity, and endurance of the bonded members.

With regard to claim 17, Inogakura et al. disclose that the 2<sup>nd</sup> member is comprised of a thermoplastic [0010].

With regard to claim 19, Inogakura et al. disclose that the integrated molded object may be used with electrical and electric equipment [0015].

With regard to claim 20, while there is no disclosure that the fiber-reinforced plastic is a part member or a panel of a motor vehicle, a two-wheeler, a bicycle, an aircraft, or an architecture as presently claimed, applicants attention is drawn to MPEP 2111.02 which states that "if the body of a claim fully and intrinsically sets forth all the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the

claimed invention's limitations, then the preamble is not considered a limitation and is of no significance to claim construction". Further, MPEP 2111.02 states that statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the purpose or intended use results in a structural difference between the claimed invention and the prior art. Only if such structural difference exists, does the recitation serve to limit the claim. If the prior art structure is capable of performing the intended use, then it meets the claim.

It is the examiner's position that the preamble does not state any distinct definition of any of the claimed invention's limitations and further that the purpose or intended use, i.e. part member or a panel of a motor vehicle, a two-wheeler, a bicycle, an aircraft, or an architecture, recited in the present claims does not result in a structural difference between the presently claimed invention and the prior art fiber-reinforced plastic and further that the prior art structure which is a fiber-reinforced plastic identical to that set forth in the present claims is capable of performing the recited purpose or intended use. Lastly, an aircraft, a two-wheeler, and a part member of a motor vehicle all may comprise electronic apparatuses, and therefore there is indirect disclosure of claim 20 in Inogakura et al.

### ***Response to Arguments***

10. Applicant's arguments, see Remarks, filed 07/03/2008, with respect to the objections to the drawings, the objections to the claims, the rejection of claims 7-9 under 35 U.S.C. 112, second paragraph, and the rejection of claims 9-13, 16, 17, 19, and 20

under 35 U.S.C. 103(a) as being unpatentable over Inogakura et al. (JP 09-277420) in view of Yoshihara et al. (EP 1191079) have been fully considered and are persuasive. The relevant objections/rejections have been withdrawn.

The last rejection was removed based upon the fact that claim 9 is now dependant off of independent claim 1; however, the Examiner does not find support for this amendment, and subsequently has made a rejection under 35 USC 112, first paragraph in section 4 above.

11. Applicant's arguments filed 07/03/2008 have been fully considered but they are not persuasive.

With regard to applicants' arguments concerning the rejection of claims 1-3, 5-13, 16, 17, 19, and 20 under 35 U.S.C. 112, second paragraph (i.e. the term "rugged"), the Examiner maintains his rejection and notes that the extra limitations added to claim 1 regarding the thickness of an area where said continuous filaments exist in said thermoplastic resin layer does not provide a definition as to the overall ruggedness of the boundary area.

Applicants' are attempting to argue that the intermingled object of Obara is not a two-layer product as is now claimed.

The Examiner respectfully disagrees and has added language to his rejections to clearly show how the product of Obara is a two-layer structure. Specifically the Examiner has stated:

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The intermingling is shown in the area **10**. The material of part **4** is a thermosetting resin identical to the material of part **6**. The material of part **5** is a thermoplastic resin identical to the material of part **7**. The Examiner deems this teaches a two-layer structure as parts **4** and **6** are the thermosetting material layer and parts **5** and **7** are the thermoplastic layer; furthermore, Figure 4 clearly shows carbon fibers **8** passing through the interface and going through both the thermosetting and thermoplastic layers. The Examiner deems the intermingling in this boundary region to comprise ruggedness.

The colors in the drawing of Obara are done to emphasize the intermingling at the boundary region, and not to denote separate materials. This intermingling region is specifically designed to provide a strong bond between a thermosetting resin and a thermoplastic resin, identical to that claimed. The device of Obara is not "intermixed" or "blended" as is suggested by applicants but rather intermingled, which the Examiner deems to be the rugged interface as claimed.

Applicants are traversing the Examiner's rejection of claims 4 and 5 by asserting that the secondary reference does not teach reinforcing fibers passing through both of the thermosetting resin layer and the thermoplastic resin layer.

It has been held that, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this instance, the primary reference is being used to show that the reinforcing fibers are passing through the thermosetting resin layer and the thermoplastic resin layer. The secondary reference is being used to teach an overall thickness of the thermoplastic resin layer as is known in the field of tennis racquets and molded products. The Examiner maintains that the overall thickness of the thermoplastic resin layer as is taught by Nishimura et al. teaches the "thickness of

an area where said continuous filaments exist in said thermoplastic resin layer" because the filaments as taught by Obara could not exist in a thickness greater than the overall layer thickness as taught by Nishimura et al.

### ***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **GERARD T. HIGGINS** whose telephone number is (571)270-3467. The examiner can normally be reached on M-F 7:30am-5pm est. (1st Friday off).



If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gerard T Higgins, Ph.D.  
Examiner  
Art Unit 1794

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Examiner, Art Unit 1794

/Callie E. Shosho/  
Supervisory Patent Examiner, Art Unit 1794